

## A critical review of the trochoidean types in the Muséum d'Histoire naturelle, Bordeaux (Mollusca, Gastropoda)

by David G. HERBERT

**Abstract.** — The type material of twenty-two nominal species of New Caledonian trochoidean gastropods, housed in the Muséum d'Histoire naturelle, Bordeaux, is discussed. The species were described by FISCHER, LAMBERT, MONTROUZIER and SOUVERBIE in the *Journal de Conchyliologie* from 1858-1879. Lectotypes are designated where more than one specimen is present and the primary types of all are illustrated. In the majority of cases the relationships of the taxa to other tropical western Pacific species require further investigation. Few of the names can be used as the earliest available names with any degree of certainty. New synonyms: *Tectaria montrouzeri* Fischer, 1878 = *Monodonta angulifera* A. Adams, 1853; *Trochus gilberti* Montrouzier in Fischer, 1878 = *Ziziphinus polychromus* A. Adams, 1853; *Trochus (Euchelus) fossulatulus* Souverbie in Souverbie & Montrouzier, 1875 = *Stomatella cancellata* Krauss, 1848.

**Key-words.** — Type material, Mollusca, Trochidae, Bordeaux Museum, New Caledonia.

### Révision critique des types de Trochoidea néo-calédoniens du Muséum d'Histoire naturelle, Bordeaux (Mollusca, Gastropoda)

**Résumé.** — Le statut de vingt-deux espèces nominales de Trochoidea indo-pacifiques est révisé sur la base du matériel-type conservé au Muséum d'Histoire naturelle de Bordeaux. Ces taxons, publiés dans le *Journal de Conchyliologie* de 1858 à 1879, ont été décrits de Nouvelle-Calédonie par FISCHER, LAMBERT, MONTROUZIER et SOUVERBIE. Des lectotypes sont désignés chaque fois que le matériel-type est représenté par plusieurs syntypes, et tous les échantillons pertinents sont illustrés. Dans la plupart des cas, l'identité de ces taxons ne peut encore être établie de façon définitive et requiert des comparaisons supplémentaires avec d'autres espèces du Pacifique occidental. Seuls quelques noms paraissent pouvoir être utilisés avec certitude comme les noms valides d'espèces néo-calédoniennes ou à plus large répartition indo-pacifique. Synonymes nouveaux : *Tectaria montrouzeri* Fischer, 1878 = *Monodonta angulifera* A. Adams, 1853; *Trochus gilberti* Montrouzier in Fischer, 1878 = *Ziziphinus polychromus* A. Adams, 1853; *Trochus (Euchelus) fossulatulus* Souverbie in Souverbie & Montrouzier, 1875 = *Stomatella cancellata* Krauss, 1848.

**Mots-clés.** — Matériel-type, Mollusca, Trochidae, Muséum Bordeaux, Nouvelle-Calédonie.

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## INTRODUCTION

The Muséum d'Histoire naturelle, Bordeaux (MHNH) [in latin *Museum Burdigalense*], houses an extensive collection of molluscs from the New Caledonian archipelago. The bulk of this material was collected by French Marist missionaries such as R. P. Xavier MONTROUZIER (1820-1897) (CROSSE 1898; O'REILLY 1931) and R. P. Pierre LAMBERT (1823-1903) (H. FISCHER 1904). The majority of new taxa were described in the *Journal de Conchyliologie* by S.-M. SOU-

VERBIE, J.-B. GASSIES, P. FISCHER and H. CROSSE, and also by the missionaries themselves. SOUVERBIE, director of the MHNH, collaborated extensively with MONTROUZIER, particularly in respect to marine molluscs, and frequently co-authored publications with him.

The material in this collection is historically important since it contains the type material of many New Caledonian species. In some instances, particularly where the specimens were numerous, it is evident that additional type material was sent to the Muséum national d'Histoire naturelle, Paris (MNHN), and it is still present in the typothèque there. Otherwise it seems that all the original material was retained in Bordeaux. Not infrequently, however, specimens acquired after the publication of the original descriptions were sent to the MNHN and some of these "ex auctore" or "ex auteur" specimens have since been accorded type status (FISCHER-PIETTE 1950). Clearly this is not justified.

The MHNH collection seems to have been largely overlooked by subsequent workers, particularly those concerned with marine taxa, and the types have rarely if ever been consulted for verification of identifications. This situation is exacerbated by the museum's present policy of not sending type material out on loan. My personal interest in the MHNH New Caledonian types concerns trochoidean vetigastropods for which, in many cases, the most recent illustrations are those given by FISCHER in KIENER's "*Spécies général*" (FISCHER 1875-1880) and PILSBRY in TRYON's "*Manual of Conchology*" (PILSBRY 1888, 1889, 1890). More recent literature makes occasional reference to some SOUVERBIE and MONTROUZIER names, but as the taxa involved are by and large very poorly known, the identifications are to some extent suspect.

In an attempt to resolve a number of uncertainties regarding Indian Ocean trochids and to obtain photographs of types for comparative purposes, I visited the MHNH. Whilst there I photographed type material of all the trochoidean taxa present, with the intention of publishing the following review.

Since New Caledonia lies near the centre of a very large zoogeographic province, it is likely that endemism in shallow water habitats is low and that most species are widely distributed. Although the MHNH collections were amongst the earliest from the New Caledonian archipelago (a region which is still being studied extensively and which has an astonishingly rich marine molluscan fauna, BOUCHET *in lit.*), molluscan material was already available from neighbouring areas of the central Indo-West Pacific (e.g. in the collection of Hugh Cuming). As a result, it is likely that a significant proportion of the taxa named by the French authors had already been studied and described by earlier workers. Establishing whether or not such is the case, however, is complicated by the paucity of material available and the poor descriptions provided by relatively prolific authors such as A. ADAMS, often with neither locality data nor illustrations. In a number of cases I have been unable to come to definite conclusions regarding the validity of the taxa under consideration and resolution of these uncertainties will require comparison of topotypic series and perhaps examination of soft parts. At present few of the names can be used as the earliest available names for distinct taxa with any degree of certainty. Difficulty has also been experienced in trying to assign the taxa to genera, largely because the genera themselves have not yet been adequately defined.

#### ABBREVIATIONS

AMS	Australian Museum, Sydney;
ANSP	Academy of Natural Sciences, Philadelphia;
BMNH	The Natural History Museum, London;
ICZN	International Code of Zoological Nomenclature;
MHNB	Muséum d'Histoire naturelle, Bordeaux;
MNHN	Muséum national d'Histoire naturelle, Paris;
ZSIC	Zoological Survey of India, Calcutta.

#### REVIEW

Taxa are listed using their original names and in alphabetical order, by genus, subgenus and species. No other trochoidean types are present in the MHNB and I know of no further trochoidean taxa for which type material should be housed there.

#### **Monodonta fischeri** Montrouzier in Souverbie & Montrouzier, 1866 (Figs 1-2)

*Monodonta fischeri* Montrouzier in Souverbie & Montrouzier, 1866: 142, pl. 6, fig. 7;  
FISCHER 1878 in 1875-1880: 246, pl. 84, fig. 1. Type loc.: "ins. Art" (New Caledonia).  
*Euchelus fischeri*; PILSBRY 1889: 443, pl. 38, figs 18, 19; KAICHER 1990: 5704.

**TYPE MATERIAL.** — Two specimens, labelled "types décrits Journ. de Conch. 1. 14, p. 4 [sic], No. 1 celui figuré pl. 6, fig. 7, Île Art, don. de l'auteur", are present in the MHNB. A further three specimens labelled "syn-types probables" and donated by Montrouzier are present in the MNHN. The original description, however, mentions only four specimens. In order to resolve this discrepancy I designate the figured specimen (No. 1 in the MHNB) as lectotype (Figs 1-2) (dimensions: diameter 3.3 mm, length 4.0 mm). It is whitish with scattered maroon-chestnut spots.

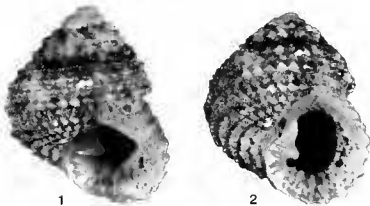
#### REMARKS

This species clearly belongs in the tribe Chilodontini of the trochoidean subfamily Eucyclinae. It is close to members of *Herpetopoma* Pilsbry, 1889, type species *Euchelus scabriusculus* Adams & Angas, in Angas, 1867, but has a more strongly protruding columella pillar with a strong basal tooth and a weaker upper one. In this respect it resembles a number of Indo-West Pacific taxa such as *Trochus gemmatus* Gould, 1845, *T. instrictus* Gould, 1849, *Monodonta exasperata* A. Adams, 1853, *Euchelus seychellarum* G. & H. Nevill, 1869, and *Clanculus crassilabrum* Sowerby, 1905, which seem to combine shell characters of several chilodontine genera, including *Euchelus*, *Herpetopoma* and "Agathodonta". Although it will not be possible to reliably assign these species to genera until the genera themselves have been adequately studied, at present *fischeri* seems best referred to *Herpetopoma*.

Compared with *T. instrictus*, this taxon is much smaller, has a more obviously beaded sculpture and more extensive deposition of callus in the parietal and columella regions, such that the umbilicus is occluded to a greater degree. *C. crassilabrum* is larger and has more numerous

spiral cords with finer granules. *M. exasperata* and *E. seychellarum* are more depressed and have a wider umbilicus.

JANSEN (1994) listed *fischeri* in the synonymy of *Trochus gemmatus* (under *Euchelus* s.l.), but did not provide discussion of the matter. Compared with the present species, Hawaiian (topotypic) material of *T. gemmatus* has a relatively strong cord at the umbilical margin, retains a wider umbilicus at maturity and has more evenly sized spiral cords. In fact, the lectotype of *T. fischeri* resembles more closely the specimens referred by JANSEN to *Euchelus* cf. *gemma* which are smaller and have a narrower umbilicus than more typical ones. She did not, however, consider these differences consistent enough to warrant regarding them as a separate species. A more definite conclusion must await further study.



FIGS 1-2. — *Monodonta fischeri* Montrouzier in Souverbie & Montrouzier, 1866, lectotype (diameter 3.3 mm, length 4.0 mm).

#### CONCLUSION

Provisionally referred to *Herpetopoma* (Eucyclinae, Chilodontini); a possible junior synonym of *H. gemmatus* (Gould, 1845).

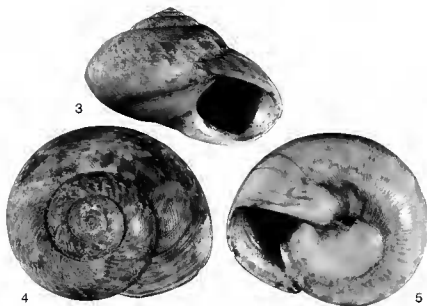
#### ***Rotella montrouzieri* Souverbie, 1858 (Figs 3-5)**

*Rotella montrouzieri* Souverbie, 1858: 376; 1860a: 123, pl. 2, fig. 11; FISCHER 1878b: 207; 1879 in 1875-1880: 379. Type loc.: "Insula Art" (New Caledonia).

*Ethalia guamensis* var. *montrouzieri*; PILSBRY 1889: 459, pl. 59, fig. 37.

*Ethalia guamensis montrouzieri*; KAICHER 1990: 5700.

TYPE MATERIAL. — One specimen, labelled "type décrit et figuré Journ. de Conch. t. 6 [sic], p. 376 et t. 8, p. 123, pl. 2, f. 11, Art, don. de l'auteur", is present in the MNHN. This is the holotype (Figs 3-5) (dimensions: diameter 15 mm, length 13 mm). Two further "ex auteur" specimens are in the MNHN, but they have no type status since the original description stated that there was only one specimen.



FIGS 3-5. — *Rotella montrouzieri* Souverbie, 1858, holotype (diameter 15 mm, length 13 mm).

#### REMARKS

FISCHER (1878b) considered *R. montrouzieri* to be no more than a colour variety of *Trochus callosus* KOCH in Philippi, 1844 (*non* Gmelin, 1791, *nec* Wood, 1828) and at the same time referred the species to a new supraspecific taxon, *Liotrochus*. KOCH's *T. callosus*, however, is itself now regarded as a synonym of *Rotella guamensis* Quoy & Gaimard, 1834, type species of *Ethalia* H. & A. Adams, 1854. PILSBRY (1889) followed FISCHER's proposal and named (1905) two further varieties, *sanguinea* and *selenomphala*, treating these and *montrouzieri* as subspecies of *guamensis*. More recently HICKMAN & MCLEAN (1990) figured *E. guamensis* and *E. montrouzieri* as separate species and HICKMAN (*in lit.*) has indicated that the *guamensis* complex of taxa (as per PILSBRY) is a heterogeneous group, including both umboniine and non-umboniine taxa. Further work is needed to clarify this issue, but the accompanying figures will help, at least, in defining *montrouzieri*.

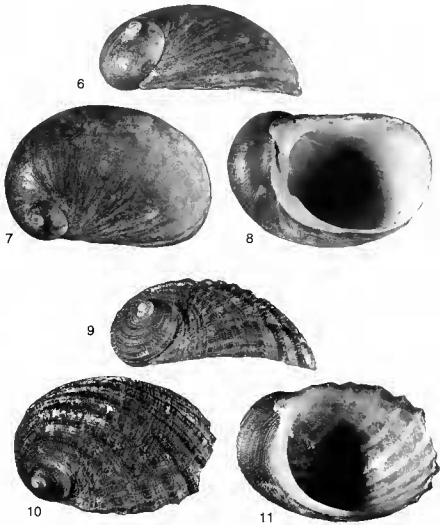
#### CONCLUSION

Part of the *Ethalia guamensis* species complex, but in need of further study.

***Stomatella (Gena?) crassa* Montrouzier in Souverbie & Montrouzier, 1870**  
(Figs 6-8)

*Stomatella (Gena?) crassa* Montrouzier in Souverbie & Montrouzier, 1870: 74, pl. 9, fig. 6.  
Type loc.: "ins. Art" (New Caledonia).

*Stomatella (Synaptocochlea) crassa*; PILSBRY 1890: 26, pl. 55, figs 22, 23.



FIGS 6-11. — *Stomatella (Gena?) crassa* Montrouzier in Souverbie & Montrouzier, 1870, and *Stomatella granosa* Lambert, 1874.  
6-8, *S. crassa*, lectotype (length 10.1 mm, width 6.6 mm); 9-11, *S. granosa*, lectotype (length 5.1 mm, width 3.8 mm).

**TYPE MATERIAL.** — The original description mentioned two specimens and both remain in the MHNH. The lot is labelled "type décrit Journ. de Conch. t. 18, p. 40 [*sic*], No. 1 celui figuré, pl. 9, f. 6, Île Art, *ex auctore*". The specimen labelled No. 1 is here refigured and designated lectotype (Figs 6-8) (dimensions: length 10.1 mm, width 6.6 mm, height 4.4 mm).

#### REMARKS

This specimen has very much the appearance of a *Stomatella*. It may well prove to be nothing more than a large, somewhat worn specimen of *Stomatella stellata* Souverbie in Souverbie & Montrouzier, 1863, see below. Comparison should also be made with *Gena caledonica* Crosse, 1871.

#### CONCLUSION

One of many nominal *Stomatella* species (Stomatellinae); its validity requires further study.

#### ***Stomatella granosa* Lambert, 1874**

(Figs 9-11)

*Stomatella granosa* Lambert, 1874: 374; SOUVERBIE & MONTROUZIER 1875: 35, pl. 4, fig. 2; PILSBRY 1890: 27. Type loc.: "ins. Lifou" (Loyalty Islands, New Caledonia).

**TYPE MATERIAL.** — The original description stated that there were two specimens, but SOUVERBIE & MONTROUZIER (1875) mentioned only a single example and this is the only one now present in the MHNH. It is labelled "type décrit Journ. de Conch. t. 22, p. 374; et t. 23, p. 35, pl. 4, f. 2, Île Lifou, *ex auctore*". There is no additional type material in the MNHN and the second specimen must be considered lost. I here figure and designate the remaining one as lectotype (Figs 9-11) (dimensions: length 5.1 mm, width 3.8 mm, height 2.3 mm).

#### REMARKS

This is a characteristic species with coarse spiral cords rendered irregularly granular where they are crossed by well-developed growth-lines. Its overall facies is that of *Synaptocochlea* rather than *Stomatella*. Shell coloration is similar to that of *Synaptocochlea caliginosa* (H. & A. Adams, 1864) (of unknown provenance; holotype BMNH 1968: 138, with operculum, Figs 59-61 herein), but *S. granosa* has much coarser spiral sculpture.

#### CONCLUSION

Evidently referable to *Synaptocochlea* (?Eucyclinae; Chilodontini) and probably a valid species.

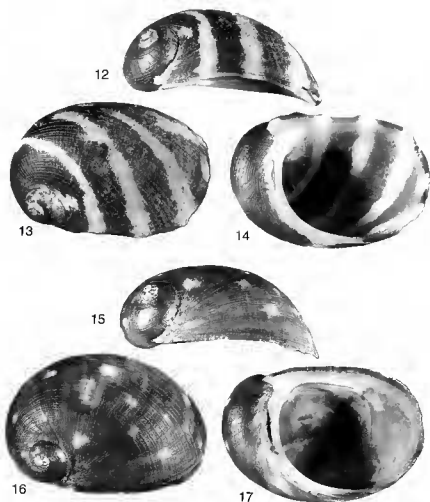
#### ***Stomatella picta* Montrouzier in Souverbie & Montrouzier, 1862**

(Figs 12-14)

*Stomatella picta* (non *Stomatia picta* d'Orbigny, 1842) Montrouzier in Souverbie & Montrouzier, 1862: 239, pl. 9, fig. 7. Type loc.: "ins. Art" (New Caledonia).

*Stomatella montrouzieri* PILSBRY 1890: 27, pl. 53, figs 74-75; nom. nov.

TYPE MATERIAL. — One specimen, labelled "type décrit et figuré Journ. de Conch. t. 18, p. 139, pl. 8, f. 7, fig. Art. don. de l'auteur", is present in MHNH (dimensions: length 4.7 mm, width 3.0 mm, height 2.2 mm). This specimen fits the dimensions given and matches the figure well, and, since the description stated that there was only one specimen, I consider this to be the holotype (Figs 12-14). There are additional "ex auctore" specimens in the MNHN, four in the typothèque and two (including operculum) in the *Journal de Conchyliologie* collection (cited by FISCHER-PIETTE 1950), but these have no type status.



FIGS 12-17. — *Stomatella picta* Montrouzier in Souverbie & Montrouzier, 1862, and *Stomatella stellata* Souverbie in Souverbie & Montrouzier, 1863. 12-14, *S. picta*, holotype (length 4.7 mm, width 3.0 mm); 15-17, *S. stellata*, holotype (length 7.5 mm, width 4.8 mm).



# REMARKS

PILSBRY (1890) considered *Stomatia picta* d'Orbigny, 1842, from the tropical western Atlantic and *Stomatella picta* Montrouzier in Souverbie & Montrouzier, 1862, to be congeneric and thus secondarily homonymous, and proposed the replacement name *Stomatella montrouzieri* for the junior name. Regardless of whether or not this secondary homonymy is real (I believe it is), MONTROUZIER's *picta* is permanently invalid (ICZN Art. 59b) and the replacement name is the valid name for the taxon. At the same time, PILSBRY proposed a new supraspecific taxon, *Synaptocochlea*, for small, spirally lirated species otherwise similar to *Stomatella*, and cited *S. montrouzieri* as the type species. The MHN specimen is thus the holotype of the type species of *Synaptocochlea* Pilsbry, 1890.

Most authors have accepted *Synaptocochlea* as a generically distinct taxon and have referred it, together with *Stomatella*, to the Stomatellinae/Stomatellidae (cf. KEEN 1960). *Synaptocochlea* species are smaller than those of *Stomatella*, lack an obvious interior nacreous layer, have fewer whorls, a coarser spiral sculpture that is rendered somewhat granose by growth-lines and retain an operculum. More recently, HICKMAN & MCLEAN (1990) have indicated that the genus is not in fact stomatelline, and should be referred to the Eucyclinae (tribe Chilodontini).

The relationships of *S. montrouzieri* to other species of *Synaptocochlea*, particularly the widespread Indo-West Pacific *S. concinna* (Gould, 1845), need to be investigated. At first glance *S. montrouzieri* appears to have a finer, less obviously beaded sculpture and (the type at least) has a bold colour pattern that lacks the red spiral lines/flecks so common in *S. concinna*. However, the range of variation shown in *S. concinna* is extensive, particularly in respect of coloration, and *S. montrouzieri* may well prove to fall within this when studied in detail. *S. picta* d'Orbigny, 1842, also merits comparison with *S. concinna* as it too is of very similar appearance. ABBOTT (1958) has suggested that *concinna* should be treated as no more than a subspecies of *picta*.

# CONCLUSION

Type species of *Synaptocochlea* Pilsbry, 1890 (?Eucyclinae, Chilodontini), and probably a synonym of *S. concinna* (Gould, 1845).

## *Stomatella stellata* Souverbie in Souverbie & Montrouzier, 1863 (Figs 15-17)

*Stomatella stellata* Souverbie in Souverbie & Montrouzier, 1863a: 169, pl. 5, fig. 10; PILSBRY 1890: 25, pl. 53, figs 76, 77, pl. 2, figs 35-37 (var. *ornatissima*); HEDLEY 1901: 128; 1909: 353. Type loc.: "ins. Art" (New Caledonia).

*Gena stellata*; MELVILL & STANDEN 1895 in 1895-1897: 126.

*Synaptocochlea stellata*; CERNOHORSKY 1978: 37, text-fig. 4; WILSON 1993: 69.

TYPE MATERIAL. — One specimen, labelled "type décrit et figuré en Journ. de Conch. 1, 11, p. 6, pl. 5, fig. 1[sic]. Île Art, don. de l'auteur", is present in the MHN (dimensions: length 7.5 mm, width 4.8 mm, height 3.2 mm). A further two specimens, "ex auctore", are present in the MNHN. Since the original description stated that only a single specimen had been seen and the MHN specimen (Figs 15-17) matches both the figure and dimensions given reasonably well, I regard it as the holotype and consider the MNHN specimens to have no type status.

#### REMARKS

CERNOHORSKY (1978) referred this species to *Synaptocochlea*, but it is difficult to be certain whether this was justified. There are features of the shell, in particular its finer sculpture, which suggest that the original referral to *Stomatella* may in fact be correct. The spiral lirae, although crossed by growth-lines, are not rendered granose by them. There is, in addition, some trace of nacre on the interior. A more conclusive appraisal must await examination of the soft parts of topotypic material.

PILSBRY (1890) placed *Stomatella ornata* Brazier, 1877, described from north-eastern Australia, in synonymy with this species. However, operculae glued inside the apertures of the four syntypes of *S. ornata* in the AMS (one here figured, Figs 62-64), ally that taxon with *Synaptocochlea*. See also remarks above regarding *Stomatella (Gena?) crassa* Montrouzier, 1870.

#### CONCLUSION

Probably a species of *Stomatella* (Stomatellinae); its validity requires further study.

#### *Tectaria montrouzieri* Fischer, 1878 (Figs 18-19)

*Tectaria montrouzieri* Fischer, 1878c: 212; SOUVERBIE & MONTROUZIER 1879: 31, pl. 3, fig. 6. Type loc.: "Île Art" (New Caledonia).

*Turcica montrouzieri*; HEDLEY 1909: 354.

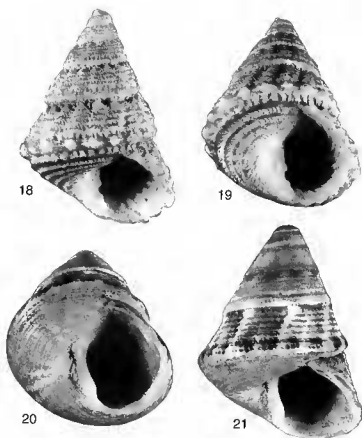
TYPE MATERIAL. — FISCHER indicated the original material to be in the "Mus. Burdigalense", but did not specify the number of specimens. SOUVERBIE & MONTROUZIER (1879) later stated that there was only one. This remains in the MHNH and must be regarded as holotype (Figs 18-19); its dimensions correspond with those given by FISCHER in the original description (diameter 7.4 mm, length 10.2 mm). It is labelled "type décrit Journ. de Conch. t. 26, p. 212 et t. 27, p. 31, pl. 3, f. 6. Souverbie - Île Art, ex auctore". A further specimen "ex auctore" is present in the MNHN, but it has no type status.

#### REMARKS

This species was not mentioned by ROSEWATER (1972) in his revision of the Indo-Pacific Tectariinae, even as a dubious or excluded taxon. Its original placement in *Tectaria*[us] was erroneous and it should instead be referred to the Trochidae (cf. HEDLEY 1909). The holotype is very similar to the type material of *Monodonta angulifera* A. Adams, 1853, from the Philippines (three syntypes, BMNH 1968215) and is clearly conspecific therewith (HERBERT in prep.). *M. angulifera* is the type species of the chilodontine genus *Perrinita* H. & A. Adams, 1854 (s.d. PILSBRY 1889).

#### CONCLUSION

A junior synonym of *Monodonta angulifera* A. Adams, 1853, type species of *Perrinita* H. & A. Adams, 1854 (Eucyclinae, Chilodontini).



FIGS 18-21. — *Tectaria montrouzieri* Fischer, 1878, and *Trochus artensis* Fischer, 1878. 18-19, *Tectaria montrouzieri*, holotype (diameter 7.4 mm, length 10.2 mm), 20-21, *Trochus artensis*, holotype (diameter 7.9 mm, length 10.2 mm).

***Trochus artensis* Fischer, 1878**  
(Figs 20-21)

*Trochus artensis* Fischer, 1878b: 208. Type loc.: "Île Art" (New Caledonia).  
*Cantharidus artensis*; PILSBRY 1889: 129.

TYPE MATERIAL. — The single "Musée de Bordeaux" specimen cited in the original description remains in the MHNB (Figs 20-21). It must be considered the holotype (dimensions: diameter 7.9 mm, length 10.2 mm). It is labelled "type décrit Journ. de Conch. 1. 26, p. 208, non figuré. Île Art, ex auctore".

**REMARKS**

There is no previous illustration of this taxon. The holotype is a badly worn specimen belonging within the *Thalotia*-*Calthalotia*-*Prothalotia* complex. It has a weak bulge at the base

of the columella and there is a fine granulation on the spiral cords. It is patterned with opisthocline, maroon, axial flames on a near white ground. PILSBRY (1889) merely translated FISCHER's original diagnosis and remarks, adding nothing to our knowledge of the taxon. HEDLEY (1908) suggested that it might be a synonym of *Thalotia crenellifera* A. Adams, 1853, from northern Australia; however, his figure of the BMNH type of that species indicates it [*crenellifera*] to be more elevated and to have a stronger columella tooth (see remarks under *Trochus gilberti*).

Other similar taxa include *Trochus (Ziziphinus) arruensis* Watson, 1880, from the Arrou [Aru] Islands (Arafura Sea), *Thalotia marginata* Tenison-Woods, 1880, and *Trochus (Thalotia) torresi* Smith, 1884, both from northern Australia. These appear to differ somewhat from *artensis*, judging from the types and original descriptions, but without good series of topotypic material by which to assess intraspecific variability it is impossible to meaningfully evaluate these differences. Before the true identity and relationships of this species can be established, fresh material will need to be studied and compared with a range of cantharidine species from the central Indo-West Pacific.

# CONCLUSION

Fresh, topotypic material requires comparison with other tropical western Pacific cantharidine taxa (Trochinae, Cantharidini).

## ***Trochus constellatus* Souverbie in Souverbie & Montrouzier, 1863** (Figs 22-25)

*Trochus constellatus* Souverbie in Souverbie & Montrouzier, 1863b: 279, pl. 12, fig. 3; FISCHER 1878 in 1875-1880: 271, pl. 90, fig. 1. Type loc.: "Balade et ins. Art" (New Caledonia). *Monodonta constellata*; PILSBRY 1889: 108, pl. 35, figs 9, 10, pl. 62, figs 69-71.

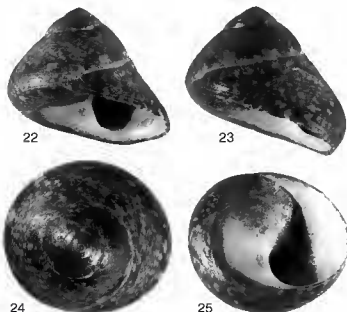
TYPE MATERIAL. — The original description cited "Mus. Burdigalense" and indicated that there were eleven specimens, two of which remain in the MHNB, labelled "types décrits Journ. de Conch. t. 11, p. 279, No. 1 celui figuré, pl. 12, fig. 3, No. 2 sujet de la note, don de l'auteur. Île Art et Balade". An additional twelve specimens labelled as types are present in the MNHN (five cited by FISCHER-PIETTE 1950), but since this exceeds the number cited originally, some must be specimens sent to Paris subsequent to the publication of the description. Unfortunately, the status of all these MNHN specimens as types is thus compromised. The MHNB specimen labelled No. 1 is here refigured (Figs 22-25) and designated lectotype (dimensions: diameter 7.9 mm, length 7.1 mm).

# REMARKS

This species clearly belongs to the gibbuline genus *Diloma* Philippi, 1845, and was in fact referred there by FISCHER (1879 in 1875-1880). Its small size, globose-conical profile, smooth columella and concave base suggest a relationship with the subgenus *Cavodiloma* Finlay, 1926, type species *Diloma coracina* (Philippi, 1851) from New Zealand. The latter has a well-developed ridge on the base extending from the columella-basal lip junction, around the margin of the basal concavity; this is scarcely evident in *T. constellatus*.

# CONCLUSION

A species of *Diloma* Philippi, 1845 (Trochinae, Gibbulini), probably belonging to subgenus *Cavodiloma* Finlay, 1926. The question of validity must await comparison with other members of the genus.



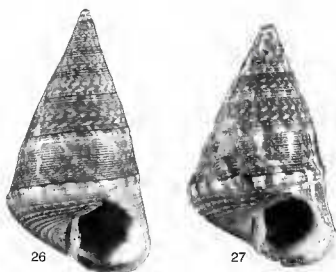
FIGS 22-25. — *Trochus constellatus* Souverbie, in Souverbie & Montrouzier, 1863, lectotype (diameter 7.9 mm, length, 7.1 mm).

## *Trochus gilberti* Montrouzier in Fischer, 1878 (Figs 26-27)

- Trochus gilberti* Montrouzier in Fischer, 1878b: 207. Type loc.: "l'île Art" (New Caledonia).  
*Trochus gilberti* (unjustified emendation) Souverbie & Montrouzier, 1879: 33, pl. 3, fig. 7;  
 FISCHER 1879 in 1875-1880: 401, pl. 119, fig. 2.  
*Cantharidus gilberti*; PILSBRY 1889: 128, pl. 45, figs 37, 38; SCHEPMAN 1908: 41, pl. 9,  
 fig. 4 (radula); CERNOHORSKY 1978: 34, pl. 8, fig. 10.  
*Cantharidus (Cantharidus) gilberti*; ADAM & LELOUP 1938: 19, pl. 2, fig. 7.  
*Cantharidus (Jujubinus) gilberti*; SPRINGSTEEN & LEOBRERA 1986: 34, pl. 5, fig. 4.  
*Jujubinus gilberti*; WILSON 1993: 80.

TYPE MATERIAL. — Two specimens, labelled "types décrits Journ. de Conch. (Fischer) t. 26, p. 207 et t. 27 (Montrouzier) t. 27 [sic], p. 33, f. 7, île Art, ex auctore", are present in the MNHN (Figs 26-27). No indication of the number of specimens originally available was given in FISCHER (1878b), but SOUVERBIE & MONTROUZIER

(1879) indicated that there were only two and figured both. The larger specimen, which is in better condition (Fig. 26), is designated lectotype (length 12.8 mm). A further six specimens, "*ex auteur*", are present in the MNHN, but they have no type status.



FIGS 26-27. — *Trochus gilberti* Montrouzier in Fischer, 1878; 26, lectotype (length 12.8 mm); 27, paralectotype (length 11.7 mm).

# REMARKS

SOUVERBIE & MONTROUZIER (1879) stated that the species was named in honour of the Reverend Father GILBERT and that the original spelling given (FISCHER 1878b) was incorrect. However, there was nothing in the original publication to indicate that such patronymy was intended and therefore, in terms of ICZN Art 32c(ii), it cannot be classed as an incorrect original spelling and the name must thus be used in its original form. *Trochus gilberti*, following ICZN Art 33b(iii), should be regarded as an unjustified emendation with its own author and date (*i.e.* SOUVERBIE & MONTROUZIER 1879), and is a junior objective synonym of *T. gilberti*. This situation is unfortunate, but compliance with ICZN (1985) offers no defensible alternative.

*T. gilberti* is synonymous with *Ziziphinus picturatus* and *Z. polychromus*, both described from the Philippines by A. Adams (1853). The synonymy of these two simultaneously published taxa was noted by PONDER (1978) who afforded *Ziziphinus polychromus* precedence. The syntypes of both are in the BMNH (*Z. polychromus* BMNH 1968111, four specimens; *Z. picturatus* BMNH 196844, two specimens), those of *Z. polychromus* are in better condition; lectotypes of both are here designated and figured (Figs 65, 66). *Cantharidus (Jujubinus) tristis* Thiele, 1930, described from north-western Australia, is a further synonym (PONDER 1978) and so too may be the northern Australian *Thalotia crenellifera* A. Adams, 1853 (*cf.* WILSON 1993).

The shell is elevated conical, with a strong peripheral spiral cord (usually shallowly bifid) and fine incised spiral striae on the adapical surface; the base is rather more coarsely lirate, the umbilicus narrow or closed and there is a denticle of rather variable prominence at the base of the columella. The ground colour is usually red or green and is very variably patterned with

white axial flames, zig-zags and/or flecks. Comparison of Figs 26-27 with Figs 65-66 shows the spiral striation of the *gilberti* types to be more close-set than that of *polychromus* or *picturatus*, but this is evidently a variable character within the species.

*Trochus fournieri* Crosse, 1863, also from New Caledonia, is similar but, judging from the holotype (BMNH 1896.12.1.9), is smaller in relation to the number of whorls, has a more evenly rounded periphery, lacks a basal columella denticle and has a bright green internal iridescence (Fig. 67). *Komaitrochus pulcher* Kuroda & Taki, 1958, from southern Japan, is broader, lacks an enlarged peripheral spiral cord and has much finer, almost obsolete spiral sculpture above the periphery.

The generic affinities of this species are problematic. It clearly belongs within the *Cantharidus-Jujubinus-Thalotia-Komaitrochus* complex, but supraspecific taxa within this group are not yet sufficiently well defined as to permit a definite statement. The species was recorded from a number of localities in Indonesia by SCHEPMAN (1908) and it will probably prove to be distributed throughout the central western Pacific.

#### CONCLUSION

A junior synonym of *Ziziphium polychromus* A. Adams, 1853 (Trochiniae, Cantharidini); generic affinity uncertain.

#### *Trochus reevei* Montrouzier in Souverbie & Montrouzier, 1866 (Figs 28-31)

*Trochus reevei* Montrouzier in Souverbie & Montrouzier, 1866: 141, pl. 6, fig. 8; FISCHER 1875: 49; 1878 in 1875-1880: 327, pl. 102, fig. 2. Type loc.: "ins. Art" (New Caledonia).

*Gibbula reevei*; PILSBRY 1889: 229, pl. 32, figs 59, 60.

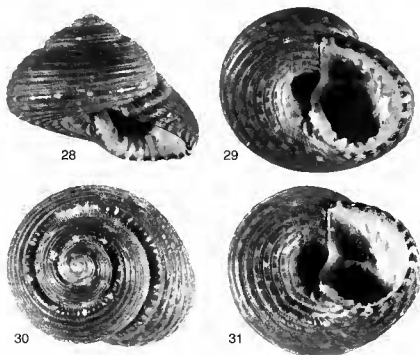
TYPE MATERIAL. — The original description stated that there were eight examples; two of these remain in the MHNB labelled "types décrits Journ. de Conch. t. 14, p. 141, No. 1 celui figuré pl. 6, f. 8. Île Art, don. de l'auteur". The other six were sent to Paris by MONTROUZIER and are in the MNHN. All may be considered syntypes. The two MHNB specimens have become detached from the original board and it is now impossible to establish which was No. 1. None the less, they are very similar and both in good condition, obviously live taken. The one with the more well-developed apertural dentation is here illustrated and designated lectotype (Figs 28-31) (dimensions: diameter 7.5 mm, length 6.0 mm).

#### REMARKS

This species superficially resembles members of the genus *Clanculus* Montfort, 1810, but lacks both a columella disjunction and strong columella teeth. In sculpture and apertural dentition it resembles *Clanculus danieli* Crosse, 1862, the type species of *Eurytrochus* Fischer, 1879, and was in fact listed thereunder by FISCHER (1879 in 1875-1880: 417). *Eurytrochus* comprises a small, but seemingly well defined group of trochids from the central Indo-West Pacific (Japan to New South Wales and India to Samoa) and is probably worthy of recognition at generic level.

*Trochus (Clanculus) bathyraphe* Smith, 1876, described from the nearby Solomon Islands, is extremely similar to *T. reevei*, even to the extent of having a turquoise-green tinted apex.

It differs, however, in having much more obviously beaded spiral cords (two syntypes BMNH 76.1.10.62, Figs 68-69). More material is needed in order to establish whether these forms differ consistently in this respect or whether they simply represent opposite ends of a graded series including specimens with intermediate sculpture.



FIGS 28-31. — *Trochus reevei* Montrouzier in Souverbie & Montrouzier, 1866, lectotype (diameter 7.5 mm, length 6.0 mm).

#### CONCLUSION

A member of the genus *Eurytrochus* Fischer, 1879 (Trochinae, ?Gibbulini), and almost certainly a valid name; perhaps an earlier name for *Trochus bathyrpaph* Smith, 1876.

#### *Trochus scrobiculatus* Souverbie in Souverbie & Montrouzier, 1866 (Figs 32-33)

*Trochus scrobiculatus* Souverbie in Souverbie & Montrouzier, 1866: 140, pl. 6, fig. 9; FISCHER 1878 in 1875-1880: 248, pl. 84, fig. 2. Type loc.: "ins. Art" (New Caledonia).

*Euchelus scrobiculatus*; PILSBRY 1889: 437, pl. 38, figs 2, 3; HIDALGO 1904-1905: 256; DAUTZENBERG & BOUGE 1933: 406; FRANC 1956: 23; MASTALLER 1979: 31.



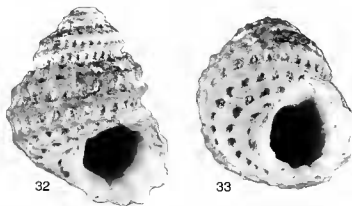
TYPE MATERIAL. — Two examples (Mus. Burdigatense) were mentioned in the original description and two remain in the MHNB, labelled "types décrits Journ. de Conch. t. 14, p. 140, No. 1 celui figuré pl. 6, f. 9. Ille Art. ex auctore". The one identified as the figured specimen is here refigured and designated lectotype (Figs 32-33) (dimensions: diameter 5.4 mm, length 6.5 mm). No type material is present in the MNHN.

#### REMARKS

This name is one of a number given to a group of small, white, cancellate, chilodontine species from a range of localities in the Indo-West Pacific. The group appears to be divisible into at least two subgroups, depending upon whether or not there are ridge-like denticles inside the outer lip when mature, but at present it is not clear whether each of the described taxa represent good species or whether a smaller number of somewhat variable species is involved. *T. scrobiculatus* belongs with those in which such denticles are present, and is thus allied to *Monodonta foveolata* A. Adams, 1853, from Lord Hood's Island (Marutêa Atoll, Tuamotu Archipelago), and *Turbo semilugubris* Deshayes, 1863, from La Réunion. Species which do not seem to develop these apertural denticles include *Monodonta clathrata* A. Adams, 1853, from the Philippines, and *Euchelus cavernosus* Sowerby, 1905, from Sri Lanka. *Euchelus favosus* Melvill & Standen, 1896, from the Loyalty Islands, also probably belongs in this group, but the figured syntype (Manchester Museum) is too juvenile to assess.

*Turbo semilugubris* differs from *Trochus scrobiculatus* in being smaller, in possessing an umbilicus and in having a bold colour pattern (MNHN syntype, Figs 70-71). *Monodonta foveolata* is more similar in size, but, judging from the lectotype (Figs 72-73, BMNH 1968071/1, designated MARSHALL 1979), has an open (albeit narrow) umbilicus, is more depressed and has less deeply cancellate sculpture. The significance of the apparent differences between *T. scrobiculatus* and *M. foveolata*, however, needs to be assessed in terms of intraspecific variation.

An element of confusion has surrounded the generic affinity of these taxa. The overall shell facies is similar to that of *Vaceuchelus* Iredale, 1929, the type species of which is *Euchelus*



FIGS 32-33. — *Trochus scrobiculatus* Sowerbie in Sowerbie & Montrouzier, 1866, specimen identified as figured specimen, here designated lectotype (diameter 5.4 mm, length 6.5 mm).

*angulatus* Pease, 1868, from "ins. Annaa" (= Anaa Atoll, Tuamotu Archipelago). PILSBRY (1889), in contrast to IREDALE (1929), believed *E. angulatus* to be no more than a variety of *M. Foveolata* and MELVILL & STANDEN (1901) followed suit. The two were regarded as distinct species by MARSHALL (1979) on the grounds that *E. angulatus* lacked denticles inside the aperture. The figure of the lectotype recently provided by JOHNSON (1994, pl. 7, fig. 13) is too small to permit this observation to be confirmed, but personal examination of the lectotype (ANSP 40671), in fact, reveals such denticles to be present inside the outer lip (Figs 74, 75). There can be little doubt therefore, that *T. scrobiculatus* is referable to *Vaceuchelus*. Members of this genus differ from those of *Herpetopoma* Pilsbry, 1889, in lacking a deep notch between the denticles at the junction of the basal and columellar lips, and in having a generally coarser sculpture.

The lectotype of *Euchelus angulatus* has a relatively narrow supra-peripheral spiral cord which lies closer to the peripheral cord than does the sub-peripheral one, and has a steeply sloping shoulder (Figs 74, 75); in this respect it differs from the types of *T. scrobiculatus* and *M. foveolata*. However, until such time as a good topotypic series can be compared, the question of the validity of these nominal taxa remains unresolved.

#### CONCLUSION

A species of *Vaceuchelus* Iredale, 1929 (Eucyclinae, Chilodontini), but specific validity requires further study.

#### ***Trochus* (*Euchelus*) *fossulatulus* Souverbie in Souverbie & Montrouzier, 1875** (Figs 34-35)

*Trochus* (*Euchelus*) *fossulatulus* Souverbie in Souverbie & Montrouzier, 1875: 39, pl. 4, fig. 5; G. & H. NEVILL 1875: 103; FISCHER 1876: 151; 1879 in 1875-1880: 391, pl. 117, fig. 2. Type loc.: "ins. Art" (New Caledonia).

*Euchelus fossulatulus* [sic]; PILSBRY 1889: 444, pl. 38, figs 15, 16; HEDLEY 1915: 710.

TYPE MATERIAL. — The two specimens mentioned in the original description remain in the MHNB. They are labelled "types décrits Journ. de Conch. 1. 23, p. 39, No. 1 celui figuré, pl. 4, f. 5. Île Art, ex auctore". Specimen No. 1 is here refigured (Figs 34-35) and designated lectotype (dimensions: diameter 9.4 mm, length 8.3 mm). There is no material in the MNHN.

#### REMARKS

PILSBRY (1889) correctly referred this species to his new taxon *Hybochelus*, noting that it differed from the type species, *Hybochelus cancellatus* (Krauss, 1848), in having a slightly more prominent spire. I can find nothing to indicate that more than one species is involved and thus regard *T. fossulatulus* as a junior synonym of *H. cancellatus*, as suggested by HEDLEY (1915). PILSBRY's description of his *H. cancellatus orientalis* (Pilsbry, 1904), from Japan, fits the types of *fossulatulus* extremely well, but I think it unlikely that such subspecific distinction is justified. The taxon is evidently distributed over a wide section of the central Indo-West Pacific, from Japan to the Philippines, Andaman Islands and New Caledonia, and probably further. It differs

from *H. mysticus* (Pilsbry, 1889) and *H. sagamiensis* Kuroda & Habe, 1971, in having a relatively wide umbilicus.

The South African locality (Table Bay) given in Krauss's original description of *H. cancellatus* is erroneous; no tropical Indo-West Pacific trochids are known to occur there. In fact, there have been no subsequent reports of the species in southern or eastern Africa as a whole.



FIGS 34-35 — *Trochus (Euchelus) fossulatus* Souverbie in Souverbie & Moutrouzier, 1875, specimen identified as figured specimen, here designated lectotype (diameter 9.4 mm, length 8.3 mm).

# CONCLUSION

A synonym of *Stomatella cancellata* Krauss, 1848, type species of *Hybochelus* Pilsbry, 1889 (Eucyclinae, Chilodontini).

## ***Trochus (Euchelus) lamberti* Souverbie in Souverbie & Montrouzier, 1875 (Figs 36-37)**

*Trochus (Euchelus) lamberti* Souverbie in Souverbie & Montrouzier, 1875: 37, pl. 4, fig. 4; G. & H. NEVILL 1875: 102; FISCHER 1876: 151; 1878b: 210; 1879 in 1875-1880: 385, pl. 116, fig. 2. Type loc.: "Insula Nou" (New Caledonia).

*Euchelus lamberti*; HEDLEY 1907: 479; 1915: 710.

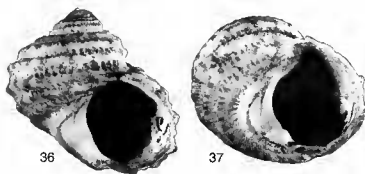
TYPE MATERIAL. — The single specimen mentioned in the original description remains in the MHNH (Figs 36-37); it must be considered the holotype (dimensions: diameter 9.0 mm, length 8.7 mm). It is labelled "type décrit Journ. de Conch. t. 13, p. 37, pl. 4, f. 4, et figuré dans Kiener [pl. 116, fig. 2]. Île Nou, ex auctore". There is no material in the MNHN.

# REMARKS

G. & H. NEVILL (1875) placed this name in the synonymy of *Tallorbia roseola* G. & H. Nevill, 1869, described from Ceylon, a proposal that was accepted by FISCHER (1879 in 1875-1880) and HEDLEY (1915). There are two syntypes of *T. roseola* in the ZSIC (M2258/1, R. N. Kilburn, pers. comm.), the larger of which is here illustrated (Fig. 76) and designated

lectotype. This specimen has a bolder colour pattern and more pronounced cancellation than the holotype of *T. lamberti*, but is in other respects very similar. Although it is perhaps unwise to assess synonymy with so little material available, I believe the apparent differences result primarily from the fresher condition of the *T. roseola* lectotype, and concur with earlier authors in considering there to be only one species involved.

The generic affinity of this species is unclear. The NEVILL brothers assigned the taxon to their new genus *Tallorbis* G. & H. Nevill, 1869, but this has subsequently been synonymised with *Euchelus* Philippi, 1847 (e.g. KEEN 1960). Certainly the taxon appears referable to the Chilodontini, but its relationships within this group require further study. HEDLEY (1915) regarded *Tallorbis* as an earlier name for *Hybochelus* Pilsbry, 1889.



FIGS 36-37. — *Trochus (Euchelus) lamberti* Souverbie in Souverbie & Montrouzier, 1875, holotype (diameter 9.0 mm, length 8.7 mm).

# CONCLUSION

A synonym of *Tallorbis roseola* G. & H. Nevill, 1869 (Eucyclinae, Chilodontini), but generic affinity requires further study.

## ***Trochus (Monilea) lifuanus* Fischer, 1878**

(Figs 38-40)

*Trochus (Monilea) lifuanus* Fischer, 1878a: 63; CERNOHORSKY 1978: 36. Type loc.: "ins. Lifu" [Lifou](Loyalty Islands, New Caledonia).

*Monilea lifuana*; SOUVERBIE & MONTROUZIER 1879: 30, pl. 3, fig. 5; FISCHER 1879 in 1875-1880: 388, pl. 116, fig. 4; PILSBRY 1889: 252, pl. 41, figs 6, 7, pl. 59, figs 64, 65; HEDLEY 1899: 405, 1909: 353.

*Trochus (Monilea) lifuana*; SMITH 1884: 73, pl. 6, figs B, B1.

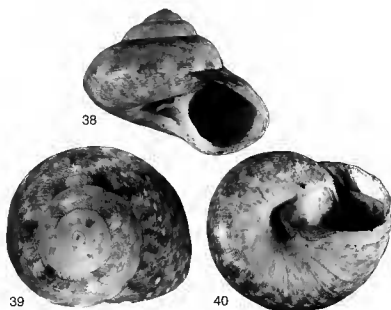
*Minolia lifouana* [sic]; MELVILL & STANDEN 1895 in 1895-1897: 125.

*Monilea (Monilea) lifuana*; LADD 1966: 40, pl. 5, figs 13, 14.

TYPE MATERIAL. — A single specimen labelled "type décrit Journ. de Conch., t. 26, p. 63, et Souverbie t. 27, *Monilea lifuana* p. 30, pl. 3, f. 5. Île Lifou, ex auctore" is present in the MHNH (Figs 38-40). It may be regarded as the holotype (dimensions: diameter 13.6 mm, length 10.7 mm). There is no material in the MNHN.

#### REMARKS

IREDALE (1929) rightly compared his new species *Talopena gloriola*, from New South Wales, with *Trochus lifuanus*, and at the same time proposed that *lifuanus* be referred to *Talopena*. There can be little doubt that *lifuanus* and *gloriola* are congeneric since their conchological similarities are considerable. Whether in fact they are referable to *Talopena* Iredale, 1918, however, is less clear, since its type species, *Monilea incerta* Iredale, 1912, has strong spiral sculpture and is clearly nothing more than a small species of *Monilea* s. str. (cf. MARSHALL 1979). Greater similarity is shown with a cluster of species conchologically intermediate between *Ethalia* H. & A. Adams, 1854, and *Ethminolia* Iredale, 1924 (HERBERT 1992, figs 131-136). The present species differs from *Ethminolia* s. str. in being larger and in possessing a distinct umbilical funicle, and from *Ethalia* s. str. in that the shell is thin and the terminal funicular callus largely separate from the parietal region. It is impossible to reliably assign these intermediate taxa to genus using conchological characters alone. Resolution of the dilemma must await studies of the radula and anatomy.



FIGS 38-40. — *Trochus (Monilea) lifuanus* Fischer, 1878, holotype (diameter 13.6 mm, length 10.7 mm).

Whether or not *T. lifuanus* and *T. gloriola* represent distinct species also requires further study. Comparison of the type material (cf. HERBERT 1992, fig. 131) indicates *gloriola* to be somewhat taller and to have a slightly less well-developed callus (that is brownish rather than green) at the end of the umbilical funicle, but these differences are not great and might easily be encompassed within the variability of a single species. CERNOHORSKY (1978) and WILSON (1993) placed *T. lifuanus* in synonymy with *Monilea vernicosa* Gould, 1861, described from the Ryukyu Islands, but I consider this unlikely. The holotype of *M. vernicosa* (JOHNSON 1964, pl. 20, fig. 2; HERBERT 1992, fig. 136), though sculpturally indistinguishable from *T. lifuanus*, is slightly more depressed and has a much weaker umbilical funicle. It could be suggested that, with a diameter of only 5.3 mm, the *vernicosa* holotype is juvenile and thus could be expected to have a more weakly developed funicle, but specimens of *T. lifuanus* of a similar size already have a much more strongly developed funicle and, furthermore, have an altogether narrower umbilicus.

# CONCLUSION

Probably a valid species and perhaps an earlier name for *Talopena gloriola* Iredale, 1929; somewhat intermediate between *Ethminolia* and *Ethalia* in shell characters (Umboniinae).

## *Trochus* (*Monilea*) *rhodomphalus* Souverbie in Souverbie & Montrouzier, 1875 (Figs 41-43)

*Trochus* (*Monilea*) *rhodomphalus* Souverbie in Souverbie & Montrouzier, 1875: 36, pl. 4, fig. 3. Type loc.: "ins. Lifou" (Loyalty Is.).

*Trochus rhodomphalus*; FISCHER 1878b: 210; 1879 in 1875-1880: 392, pl. 117, fig. 3.

*Monilea rhodomphala*; PILSBRY 1889: 262, pl. 41, figs 22-24.

*Minolia rhodomphala*; MELVILL & STANDEN 1897 in 1895-1897: 414.

TYPE MATERIAL. — The original description cites "Mus. Burdigalense" and mentions three specimens. Only two, bearing the label "types décrits Journ. de Conch. t. 23, p. 36, No. 1 celui figuré pl. 4, f. 3, No. 2 celui figuré dans Kiener et Fischer [= FISCHER 1879 in 1875-1880, pl. 117, fig. 3]. Île Lifou, ex auctore", are now present in the MHNH. The first of these is here refigured (Figs 41-43) and designated lectotype (dimensions: diameter 7.6 mm, length 5.0 mm). There is no material in the MNHN.

# REMARKS

Similar to a number of taxa described from the central Indo-West Pacific. *Ethalia rhodomphala* Smith, 1903, from the Maldives and Laccadive archipelagos (three syntypes BMNH 1903.9.17.57-59, one here figured and designated lectotype, Figs 77-79), differs in having non-shouldered whorls and thus a more flat-sided spire; it also has a well-developed, linguiform callus deposit at the junction of the columella and parietal region, strong plicae at the umbilical margin and is more glossy. *Ethalia floccata* Sowerby, 1903, from Japan (holotype BMNH 1903.12.7.15), is perhaps the most similar species, but besides differences in coloration, the holotype of that taxon has more or less obsolete spiral sculpture and has a wider umbilicus with a less strongly thickened margin (Figs 80-82). *Isanda pulchella* A. Adams, 1855, from Mindoro,

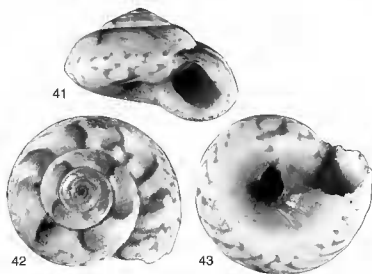
Philippines (holotype BMNH 1968350) and *Ethalia capillata* Gould, 1862, from China, are closer to *E. rhodomphala* Smith, 1903, but *I. pulchella* has a more funnel-shaped umbilicus with weaker marginal plicae (Figs 83-85), and *E. capillata* a larger linguiform callus that almost totally occludes the umbilicus (lectotype figured by JOHNSON 1964, pl. 5, fig. 14).

PILSBRY (1905) united these taxa (save for *E. capillata*) in his new genus *Ethaliella*, citing *E. floccata* as the type species. If conchological criteria alone are considered, there is perhaps justification for this, but additional data from the external anatomy and radula may prove otherwise. Whether these five nominal taxa represent distinct species is also open to question. *T. rhodomphalus* and *E. floccata* could easily represent variations of a single species, perhaps belonging in *Ethminolia* Iredale, 1924 or *Ethalia* H. & A. Adams, 1854. Similarly, *E. rhodomphala*, *E. capillata* and *I. pulchella* may be another single species. However, in the absence of adequate series of specimens and data on external anatomy and radula, it is worthless to speculate further on this. Three additional taxa, *Minolia ceraunia*, *M. edithae* and *M. malcolmia*, described by MELVILL (1891) from the Philippines also merit comparison with this group of species.

FISCHER (1878b) indicated that he believed *Trochus rotellaeformis* Philippi, 1849, of unknown provenance, to be a synonym of *T. rhodomphalus*. PHILIPPI stated that the original material was in the collection of Silvanus Hanley, but it could not be traced at the Leeds Museum (NORRIS *in lit.*) and thus I cannot confirm the synonymy.

#### CONCLUSION

A member of the *Ethaliella* group of species (Umbroniinae) and probably an earlier name for *Ethalia floccata* Sowerby, 1903.



FIGS 41-43. — *Trochus (Monilea) rhodomphalus* Souverbie in Souverbie & Montrouzier, 1875, specimen figured with original description and here designated lectotype (diameter 7.6 mm, length 5.0 mm).

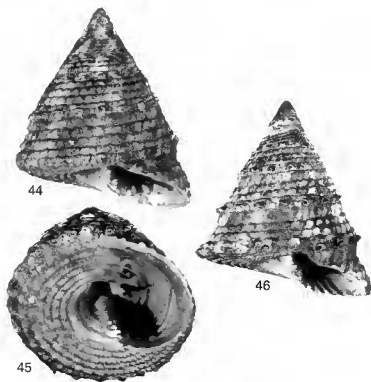
**Trochus (Polydonta) calcaratus** Souverbie in Souverbie & Montrouzier, 1875  
(Figs 44-46)

*Trochus (Polydonta) calcaratus* Souverbie in Souverbie & Montrouzier, 1875: 41, pl. 4, figs 7, 7a. Type loc.: "ins. Art" (New Caledonia).

*Trochus calcaratus*; FISCHER 1875: 48; 1879 in 1875-1880: 347, pl. 109, fig. 2; PILSBRY 1889: 30, pl. 2, fig. 15, pl. 8, figs 83, 84; HIDALGO 1904-1905: 246; HEDLEY 1909: 353; KAICHER 1979: 2174.

*Infundibulum (Lamprostoma) calcaratum*; DAUTZENBERG & BOUGE 1933: 405.

TYPE MATERIAL. — The original description stated that twelve examples had been seen; only two, labelled "types! décrits Journ. de Conch. t. 23, p. 41, et figurés pl. 4, f. 7 & 7a. Île Art, ex auctore!", are present in the MHNH. There are none in the MNHN. Although one of the specimens is labelled 7a, the original plate did not distinguish fig. 7 from fig. 7a. Because specimen 7a (Figs 44-45) has more mature apertural and umbilical features, I designate it lectotype (dimensions: diameter 23 mm, length 28 mm).



FIGS 44-46. — *Trochus (Polydonta) calcaratus* Souverbie in Souverbie & Montrouzier, 1875. 44-45, lectotype (diameter 23 mm, length 28 mm); 46, paralectotype (diameter 21 mm, length 23 mm).



#### REMARKS

PILSBRY (1889), with some reservations, relegated a number of taxa to the synonymy of *T. calcaratus*, some of which in fact pre-date it. More recently, CERNOHORSKY (1978) and WILSON (1993) placed *T. calcaratus* in synonymy with *T. histrio* Reeve, 1861 (apparent syntype in BMNH illustrated by KAICHER 1979, under *T. sacellum*, card No. 2169). Our current understanding of the taxonomy of the genus *Trochus*, however, is woefully inadequate. Numerous species of *Trochus* were described during the last century, many of which simply represent individual variants of intraspecifically variable species. The situation is complicated further by the fact that descriptions and illustrations were often poor and that the type material of many is now lost. Although the synonymy proposed by CERNOHORSKY may be sound, it needs to be investigated in detail. It remains quite possible that there is a still earlier name for the species (for example *Trochus sacellum* Philippi, 1855).

Both remaining specimens in the type lot of *T. calcaratus* are here illustrated (Figs 44-46) to show the variation in the development of the peripheral angle and projections. The species is relatively small for the genus, showing mature apertural characters at length 30 mm; one of its most notable features is the series of hollow triangular projections at the periphery, but this is not a unique character (cf. *Trochus aemulans* (A. Adams, 1855) from China and *T. tubiferus* Kiener, 1850, from New Caledonia). The specimens are white to pale buff, with broad reddish axial markings.

#### CONCLUSION

One of the many dubiously valid species of *Trochus* s. str. (*Trochinae*, *Trochini*); in need of detailed comparison.

#### ***Trochus (Tectus) fabrei* Montrouzier in Fischer, 1878 (Figs 47-48)**

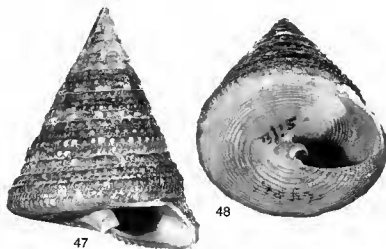
*Trochus (Tectus) fabrei* Montrouzier in Fischer, 1878a: 64; FISCHER 1879 in 1875-1880: 384, pl. 116, figs 1, 1a. Type loc.: "ins. Lifu" [Lifou] [Loyalty Islands, New Caledonia].  
*Trochus fabrei*; PILSBRY 1889: 21, pl. 3, figs 21, 22.

TYPE MATERIAL. — Two specimens are present in the MHNH; one (leg. Montrouzier) from "Lifu" [Lifou] and a second (leg. Lambert), a fossil from raised beach deposits on the île des Pins (both localities in the New Caledonian archipelago). They bear the label "J. Conch. 1. 26: 64 & 206". No figure was provided with the original description (FISCHER 1878a), the first illustrations being those given in the "*Spécies général*" (FISCHER 1879 in 1875-1880). Both specimens were illustrated, the Lifou one as fig. 1a, and the larger, fossil one as fig. 1. The Lifou specimen is here refigured (Figs 47-48) and designated lectotype (dimensions: diameter 26.5 mm, length 34.3 mm).

#### REMARKS

This material is indeed referable to *Tectus* Montfort, 1810, a taxon currently afforded full generic rank. The strong columella pleat suggests referral to *Tectus* s. str.

FISCHER's remarks on the species are pertinent (FISCHER 1879 in 1875-1880). There is considerable similarity with *Tectus triserialis* (Lamarck, 1822), but *T. fabrei* would seem to be less elevated and to have a sculpture of granular spiral cords rather than the spirally aligned rows of nodules typical of *T. triserialis*. However, the extent to which *T. triserialis* varies in length and sculpture needs to be further investigated. *T. pyramis* (Born, 1778) is less elevated, generally more coeloconoid and, with the exception of strong peripheral granules on the spire whorls, is smoother.



FIGS 47-48. — *Trochus (Tectus) fabrei* Montrouzier in Fischer, 1878, lectotype (diameter 26.5 mm, length 34.3 mm).

#### CONCLUSION

A species of *Tectus* s. str. (Trochinae, Trochini); further comparison with *T. triserialis* (Lamarck, 1822) is needed.

#### ***Trochus (Zizyphinus) poupineli* Montrouzier in Souverbie & Montrouzier, 1875 (Figs 49-50)**

*Trochus (Zizyphinus) poupineli* Montrouzier in Souverbie & Montrouzier, 1875: 40, pl. 4, fig. 6; FISCHER 1878b: 210; 1879 in 1875-1880: 387, pl. 116, fig. 3. Type loc.: "ins. Art" (New Caledonia).

*Calliostoma poupineli*; PILSBRY 1889: 350, pl. 17, fig. 41.

*Dactylastele poupineli*; MARSHALL 1995, figs 79-82, 135, 155.

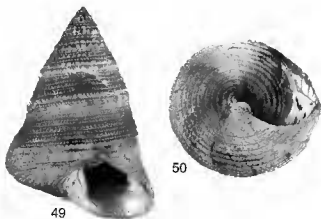
**TYPE MATERIAL.** — The single specimen mentioned in the original description remains in the MHNB, it must be regarded as the holotype (Figs 49-50) (dimensions: diameter 8.4 mm, length 11.7 mm). It is labelled "type décrit Journ. de Conch. et figuré dans Kien. t. 23, p. 40, pl. 4, f. 6 [= figure in *J. Conch. Paris*], Île Art, ex auctore". There are two "ex aucteur" specimens in the MNHN.

# REMARKS

Frequently regarded a synonym of *Ziziphinus comptus* A. Adams, 1854, and used in place of that name to avoid confusion with *Calliostoma comptus* (Philippi, 1855) (see for example PILSBRY 1889). The species has recently been discussed in detail by MARSHALL (1995) who recognised it as distinct from *Calliostoma comptum*, and referred it to the new genus *Dactylastele*.

# CONCLUSION

A valid species (Calliostomatidae).



FIGS 49-50. — *Trochus (Ziziphinus) poupineli* Montrouzier in Souverbie & Montrouzier, 1875, holotype (diameter 8.4 mm, length 11.7 mm).

## *Turbo artensis* Montrouzier in Souverbie, 1860 (Fig. 51)

*Turbo artensis* Montrouzier in Souverbie, 1860b: 370; SOUVERBIE 1861: 274, pl. 11, fig. 5; FISCHER 1873: 58, pl. 37, fig. 1, pl. 38, fig. 1; PILSBRY 1888: 196, pl. 45, figs 96-97; FISCHER-PIETTE 1950: 19; KAICHER 1988: 5291. Type loc.: "ins. Art" (New Caledonia).

*Turbo (Senectus) artensis*, MELVILL & STANDEN 1895 in 1895-1897: 124.

*Turbo (Marmorastoma) artensis*, CERNOHORSKY 1978: 39, pl. 10, fig. 3.

**TYPE MATERIAL.** — The original description did not specify the number of specimens available, but SOUVERBIE (1861) stated that numerous examples had been seen. Two specimens are present in the MHNB, labelled "No. 1 et 2, types décrits Journ. de Conch. t. 8, p. 370 et t. 9, p. 274, No. 1 type figuré pl. 11, fig. 5. Île Art, don de l'auteur". Two further lots, labelled as types, are present in the MNHN. One of these, in the l'ypothèque, contains four adult specimens and three juveniles; one of the adults bears a note stating "un des exemplaires ayant servi

à la diagnose. Ex auctore!". The second lot, in the *Journal de Conchyliologie* collection, has two specimens which were listed as types by FISCHER-PIETTE (1950: 19), the larger of these he also cited as the figured specimen. There is, however, nothing associated with this specimen to indicate that this was the case (normally in the *Journal de Conchyliologie* collection there would be, *V. HEROS in lit.*) and in view of the fact that the MHNB specimen No.1 is specifically annotated as being the figured one I designate it as lectotype (here refigured, Fig. 51) (dimensions: diameter 44.5 mm, length 47 mm). This is also the course of action advised by Recommendation 74D of the ICZN, since the majority of the author's types are in Bordeaux. The other MHNB specimen and the MNHN specimen cited as being one of those upon which the diagnosis was based should be considered paralectotypes, but the type status of the remainder is dubious.

#### REMARKS

This would seem to be a fairly distinct species characterised by shape and sculpture. It has relatively strong spiral cords, the intervals between which have a single finer spiral thread which is crossed by >-shaped axial pliculae producing a close-set, herring-bone sculpture. There is no umbilicus and the peristome is markedly drawn out and flaring where the columella and outer lip meet. The ground colour is orange-brown (perhaps somewhat faded) with a few darker and lighter axial stripes. The operculum is for the most part smooth, but possesses some rippling on the outer lip side; the markings shown in Fig. 51 are a result of discoloration.

#### CONCLUSION

A valid species of *Turbo* (Turbinidae, Turbininae).

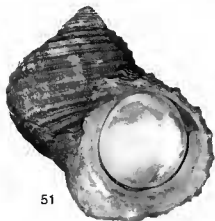


FIG. 51. — *Turbo artensis* Montrouzier in Soubervie, 1860, specimen figured with original description and here designated lectotype (diameter 44.5 mm, length 47.0 mm).

#### *Turbo laetus* Montrouzier in Soubervie & Montrouzier, 1863 (Figs 52-54)

*Turbo laetus* Montrouzier in Soubervie & Montrouzier, 1863b: 277, pl. 12, fig. 2. Type loc.: "Balade et ins. Art" (New Caledonia).

*Leptothyra laeta*; PILSBRY 1888: 258, pl. 63, figs 29, 30; HEDLEY 1899: 408, 1907: 479, 1909: 355; SHOPLAND 1902: 176; HIDALGO 1904-1905: 245; MELVILL 1918: 152; IREDALE 1929: 273; VIADER 1937: 55.

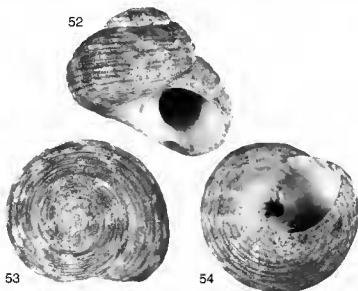
TYPE MATERIAL. — There are four syntypes in the MHNH, labelled "types décrits Journ. de Conch. No. 1 celui figuré, pl. 4 [*sic*], f. 2. Île Art. don. de l'auteur". No. 1 is here refigured (Figs 52-54) and designated lectotype (diameter 5,0 mm). There are a further eleven specimens labelled as syntypes in the MNHN and four specimens "ex auteur". The original description stated that there were twenty-five specimens.

#### REMARKS

This name is a junior primary homonym of *Turbo laetus* Philippi, 1849. SOWERBY (1886) proposed the replacement name *costulosus*, an adaptation of "*Turbo costulatus* Gould" (ms?) (non Wood, 1828). This is one of numerous species of *Collonista* Iredale, 1918, described from the Indo-West Pacific. J. H. MCLEAN, who is currently revising the Colloniinae, has indicated (MCLEAN *in lit.*) that the earliest non-homonymous name for this taxon is *Collonia granulosa* Pease, 1868, based on material from the Caroline Islands. A lectotype for the latter was designated and figured by JOHNSON (1994), but the figure number was inadvertently transposed with that of *C. picta* Pease, 1868. JOHNSON's fig. 21 is in fact that of the lectotype of *C. granulosa* (error noted by MCLEAN).

#### CONCLUSION

A junior primary homonym, the earliest available name for which is *Collonia granulosa* Pease, 1868 (*vide* MCLEAN *in lit.*); should be referred to *Collonista* Iredale, 1918 (Turbinidae, Colloniinae).



FIGS 52-54. — *Turbo laetus* Montrouzier in Souverbie & Montrouzier, 1863, specimen figured with original description and here designated lectotype (diameter 5,0 mm).

**Turbo naninus** Souverbie in Souverbie & Montrouzier, 1864  
(Figs 55-58)

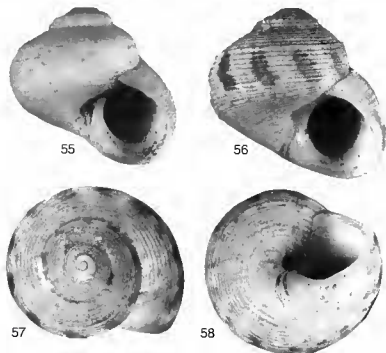
*Turbo naninus* Souverbie, in Souverbie & Montrouzier, 1864: 263, pl. 10, fig. 6; SOUVERBIE 1875: 293, pl. 13, fig. 9. Type loc.: "ins. Art" (New Caledonia).

*Leptothyra nanina*; PILSBRY 1888: 259, pl. 58, figs 55, 56; HEDLEY 1907: 479; 1909: 355; CERNOHORSKY 1978: 39, pl. 10, fig. 5.

**TYPE MATERIAL.** — There are two separate type lots of this species in the MHNH, each with one specimen. The first is labelled "types décrits et figurés Journ. de Conch. t. 12, p. 235 [sic], pl. 11 [sic], fig. 6 (Mala.). Ile Art, don de l'auteur", whilst the label attached to the second states "Journ. de Conch. t. 12, p. 243 [sic], pl. 10, fig. 6 (Mala.) in ibid., t. 23, p. 293, pl. 13, fig. 9. Type *characteribus emendatis, ex auctore*." The original description stated that only a single specimen was available and thus the specimen in the first lot, upon which the original description and figure were based, must be regarded as the holotype (Fig. 55, diameter 3.0 mm), despite the fact that SOUVERBIE (1875) considered it "un peu imparfait". The specimen in the second lot (cf. Figs 56-58) is simply a fresher example that SOUVERBIE (1875) used to augment the description, but it has no type status. There are two further specimens labelled syntypes in the MNHN; these are *ex auctore* specimens, but they likewise have no status as types.

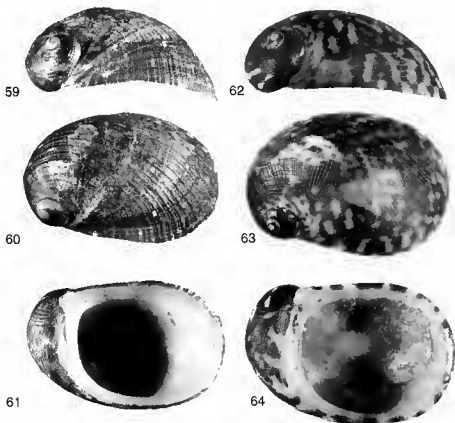
**REMARKS**

Resembles the preceding species, but the last adult whorl is somewhat biangular with a distinct angle at the shoulder and a weaker one marking the periphery of the base. The sculpture



FIGS 55-58. — *Turbo naninus* Souverbie in Souverbie & Montrouzier, 1864. 55, holotype (diameter 3.0 mm); 56-58, fresher, *characteribus emendatis* specimen of Souverbie (1875) (diameter 3.0 mm)

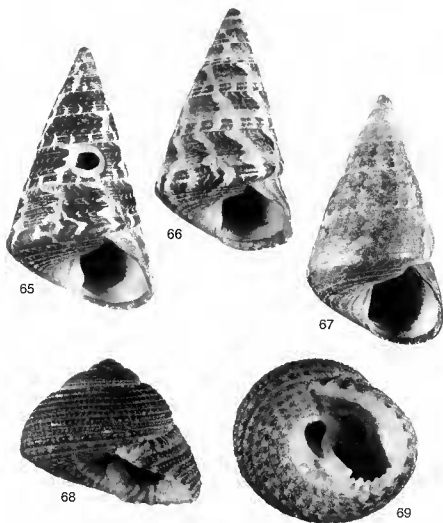
is finer and, judging from the material available, the species would seem to be smaller. This taxon also belongs within *Collonista* and is being studied by J. H. McLEAN, who indicated (*in lit.*) that it may prove to be a New Caledonian endemic.



FIGS 59-64. — *Stomatella caliginosa* H. & A. Adams, 1864 and *Stomatella ornata* Brazier, 1877. 59-61, *S. caliginosa*, holotype (BMNH), length 7.9 mm; 62-64, *S. ornata*, one of four syntypes in AMS, (length 7.5 mm).

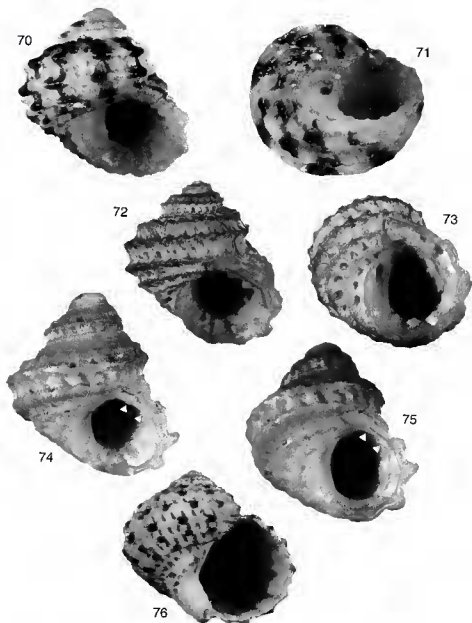
#### Acknowledgements

I would like to thank the authorities of the MHNH for permission to examine the New Caledonian types in their custody, and in particular Mme Nathalie MEMOIRE without whose assistance this study would not have been possible. I thank also Bernard MÉTIVIER (MNH) and Kathie WAY (BMNH) for their help whilst examining types under their care, Ian LOCH (AMS) for the loan of Brazier types, Gary ROSENBERG (ANSP) for Pease types and Dick KILBURN for photographs of types in the Zoological Survey of India. Philippe BOUCHET, Dick KILBURN, Bruce MARSHALL and Jim McLEAN provided valuable comments on the manuscript and Virginie HEROS checked the accuracy of my statements regarding the MNHN types. The study was funded through my personal Foundation for Research Development grant.

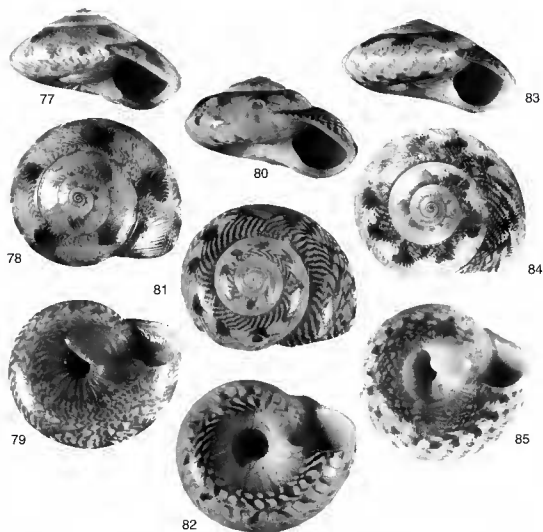


FIGS 65-69. — *Ziziphinus polychromus* A. Adams, 1853, *Ziziphinus picturatus* A. Adams, 1853, *Trochus fourrieri* Crosse, 1863 and *Trochus (Clanculus) bathyraphe* Smith, 1876. 65, *Z. polychromus*, lectotype (BMNH), length 12.3 mm; 66, *Z. picturatus*, lectotype (BMNH), length 11.5 mm; 67, *T. fourrieri*, holotype (BMNH), length 7.9 mm; 68-69, *T. bathyraphe*, one of two syntypes (BMNH), diameter 8.3 mm.





FIGS 70-76. — *Turbo semitugubris* Deshayes, 1863, *Monodonta foveolata* A. Adams, 1853, *Euchelus angulatus* Pease, 1868, and *Tallorbia roseola* G. & H. Nevill, 1869. 70-71, *T. semitugubris*, one of two syntypes (MNHN), diameter 2.66 mm; 72-73, *M. foveolata*, lectotype (BMNH), diameter 5.2 mm; 74-75, *E. angulatus* Pease, 1868, lectotype (ANSP 40671), diameter 4.6 mm, denticles inside outer lip present, but not obvious (arrows); 76, *T. roseola*, lectotype (ZSIC), diameter 9.1 mm (photograph courtesy of R. N. Kilburn).



FIGS 77-85. — *Ethalva rhodomphala* Smith, 1903, *Ethalva floccata* Sowerby, 1903 and *Isanda pulchella* A. Adams, 1855. 77-79, *E. rhodomphala*, lectotype (BMNH), diameter 6.9 mm; 80-82, *E. floccata*, holotype (BMNH), diameter 7.9 mm; 83-85, *I. pulchella*, holotype (BMNH), diameter 7.5 mm.

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